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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,348	12/05/2003	Michael Fleisher	10006.001810	8262
31894 7590 08/14/2007 OKAMOTO & BENEDICTO, LLP P.O. BOX 641330 SAN JOSE, CA 95164			EXAMINER LIEW, ALEX KOK SOON	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 08/14/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/729,348

Applicant(s)

FLEISHER ET AL.

Examiner

Alex Liew

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-13 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With regards to claim 6, the examiner cannot find any applicable prior art and / or suggestion disclosing statistical f-test is passed if a ratio of  $\max(\sigma_1^2, \sigma_2^2)$  divided by  $\min(\sigma_1^2, \sigma_2^2)$  is less than a threshold value, and wherein  $\sigma_1^2$  and  $\sigma_2^2$  comprise the variances of the adjacent image regions in combination to the rest of the limitations of claims 1, 4 and 5.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2 and 10 – 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Le (US pat no 7,031,517).

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With regards to claim 1, Le discloses a method of determining a measure of image complexity, the method comprising:

- subdividing an image into a plurality of small regions (see figure 7B to 7E – the initial image is split into rectangular regions until the smallest rectangle provides an approximate shape of the object in the image, shown in figure 7E),
- performing multiple statistical test to determine the similarity of at least one pair of adjacent image regions (see figure 9 – the regions are merged using  $V(w)$ , equation 6, minimization method, if the value of the minimization technique falls under a threshold value then regions is merge, shown in column 22 lines 35 – 43) and
- grouping the at least one pair of adjacent image regions together into one new region if said pair passes the multiple statistical tests (if the value of the minimization technique falls under a threshold value then regions is merge, shown in column 22 lines 35 – 43).

With regards to claim 2, Le discloses a method of claim 1, further comprising iterating said steps of performing the multiple statistical tests for pairs of adjacent image regions and grouping the pairs of image regions that pass the multiple statistical tests until no remaining pairs of adjacent image region in the image pass the multiple statistical tests (see figure 9 – at 906 the iteration occurs is 'Yes' is the result of 906, the statistical tests are perform until 906 becomes a 'No' which is when all the adjacent regions is un-combinable anymore, figure 8B).

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With regards to claim 10, Le reads on a method of claim 1, wherein the method is used to guide segmentation of an image into arbitrarily shaped regions (see figure 7B to 7E – the object in the image which is being segmented in any arbitrarily shape, like ellipse and parallelogram).

With regards to claim 11, see the rationale and rejection for claim 1.

With regards to claim 12, Le reads on a device of claim 11, further comprising an image segmenter configured to received a measure of complexity of the image frame from the complexity measuring apparatus (see figure 9 – 906 is a measure of complexity between adjacent image segment to determine if the their difference in similarity or feature values are within a threshold value).

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Le ('517) as applied to claim 1 further in view of Maurer (US pat no 6,560,354).

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With regards to claim 3, Le discloses all the limitations discussed in claim 1, but does not disclose making a weighted counted of the resulting image regions, where weights depend on a geometrical characteristic of the image region. Maurer discloses making a weighted counted of the resulting image regions, where weights depend on a geometrical characteristic of the image region (see column 3 lines 24 – 32). One skilled in the art would assign weight for segmented regions because to help determine shapes of the segmented regions that is similarly aligned to each other, to improve merging technique.

3. Claims 4, 5 and 7 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Le ('517) as applied to claim 1 further in view of Baatz (US pat no 6,832,002).

With regards to claim 4, Le discloses all the limitations discussed in claim 1, but does not disclose statistical tests include a test of whether the adjacent image regions have sufficiently similar variance in their data. Baatz discloses a test of whether the adjacent image regions have sufficiently similar variance in their data (see equation 2 –  $m_1$  and  $m_2$  are means of two objects which are adjacent to each other, column 9 lines 47 – 51, and  $\sigma_1$  and  $\sigma_2$  are standard deviations of the two object regions, to compute the standard deviation, one must compute the variance of a given image region). One skilled in the art would include calculation of variance of two adjacent image regions because to determine whether those regions belong to the foreground or background; most scene background has low variance, for example segmentation or merging of

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image regions of a text document, the background image may just be a single color, usually white, which has very low variance because to the single color and no variation in the pixel values; the high variance of the foreground may include text which has two distinct colors, white and black, which results in higher variance; knowing the boundaries of the background and foreground will improve image region segmentations or merging.

With regards to claim 5, an extension to the arguments to the rejection of claim 4, Baatz discloses whether adjacent image regions are determined to have sufficient similarity using variance calculation, using f-test (see equation 2 and column 9 lines 47 – 51 – the f-test includes statistical parameters such as the variance to merge adjacent region as describe on pages 10 and 11 of the specification).

With regards to claim 7, an extension to the arguments to the rejection of claim 4, Baatz reads on a test of whether data for the adjacent image regions have sufficiently similar means in their data (equation 1 determines the means of the adjacent object regions are within a predetermined tolerance).

With regards to claim 8, an extension to the arguments to the rejection of claim 4, Baatz reads on adjacent image regions are determined to have sufficiently similar means if a statistical t-test is passed (see equation 1, see page 11 of the specification the t-test is

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to have a fixed tolerance threshold in the current invention, alpha of Baatz reads on the threshold of the current invention).

With regards to claim 9, see the rationale and rejection for claims 5 and 8.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over ~~Le ('517)~~ Gardos (US pat no 6,381,364) in view of Le ('517).

With regards to claim 13, Gardos discloses a system for encoding and decoding image frames of a video sequence, the system comprising

- an encoder for encoding the image frame of the video sequence including at least an image segmenter (see figure 1) and
- a decoder for receiving for receiving an encoded bit stream from the encoder and configured to reconstruct the video sequence (see figure 2).

Gardos does not disclose complexity measure. Le discloses complexity measure, wherein the complexity measuring apparatus is configured to subdivide the image frame into a plurality of small image regions, perform multiple statistical tests to determine the similarity of at least one pair of adjacent image regions, and group the at least one pair of adjacent image regions together into new region if said pair passes the multiple statistical tests (see equation 1 or 2 – adjacent image object regions are joined together if equation 1 or 1 are true). One skilled in the art would include complexity measure



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because to determine if an image is divided properly in order to identify or classify object in images with minimum errors.

## Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Liew whose telephone number is (571)272-8623. The examiner can normally be reached on 9:30AM - 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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8/1/07



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